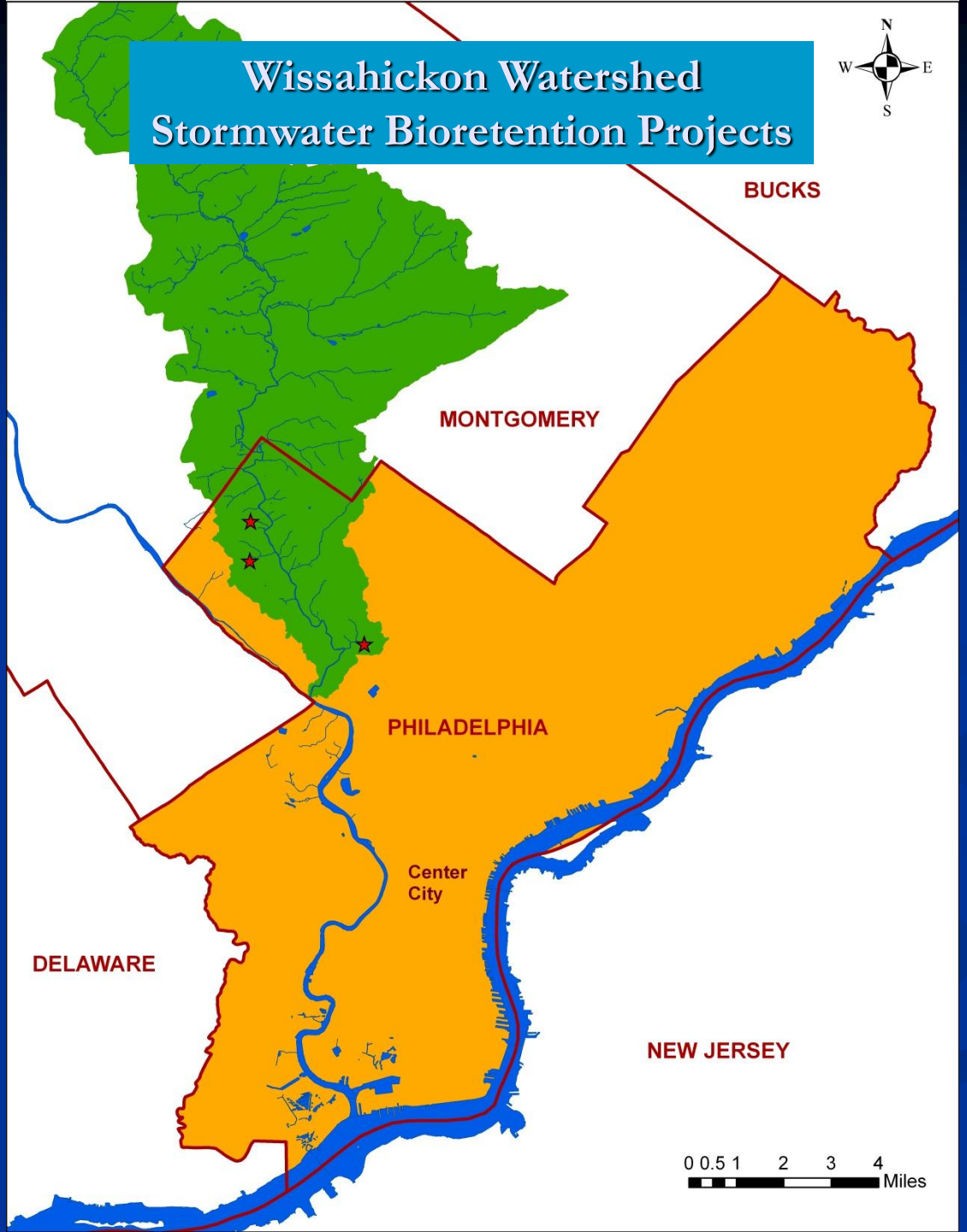
Retrofitting Urban Stormwater Infrastructure for Treatment and Ecological Enhancement in Philadelphia, PA

Rick Howley
Philadelphia Water Department

Philadelphia PWD Water Department

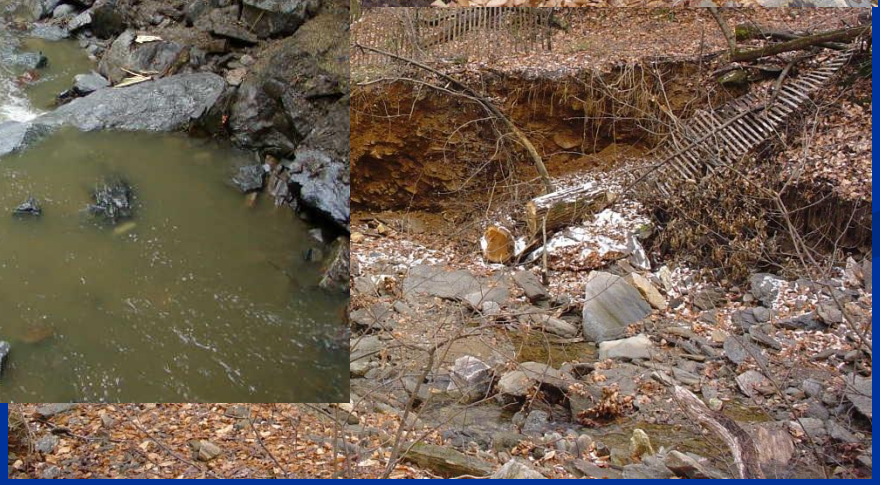
Fairmount Park
PHILADELPHIA'S PARK SYSTEM

Wissahickon Watershed Stormwater Bioretention Projects



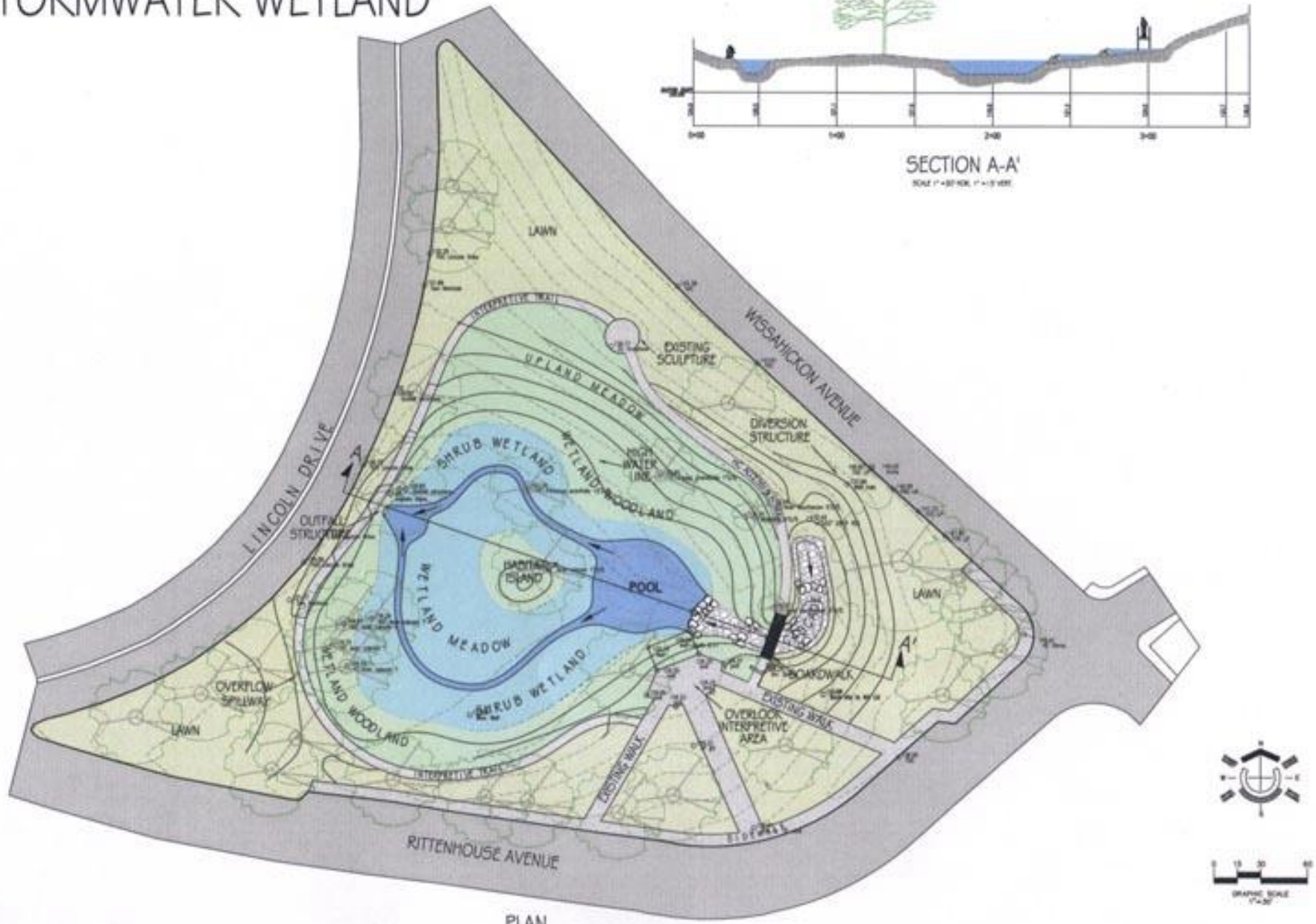
Why Manage Stormwater?

- Regulatory Compliance
- Channel Form Degradation
- Peak Flow Reduction
- Water Quality Improvement
- Ecological Uplift



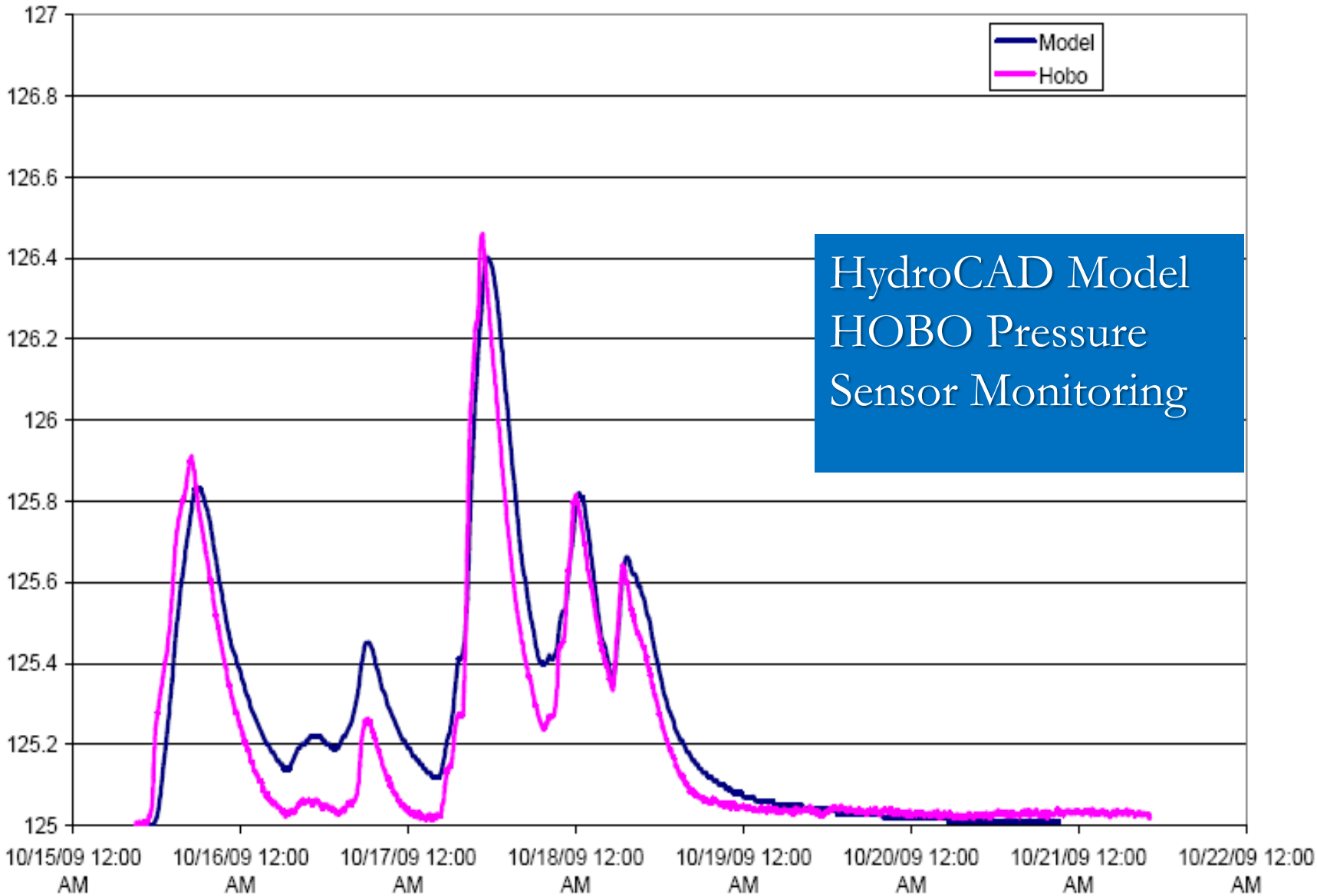
Saylors Grove 2004

SAYLOR'S GROVE STORMWATER WETLAND



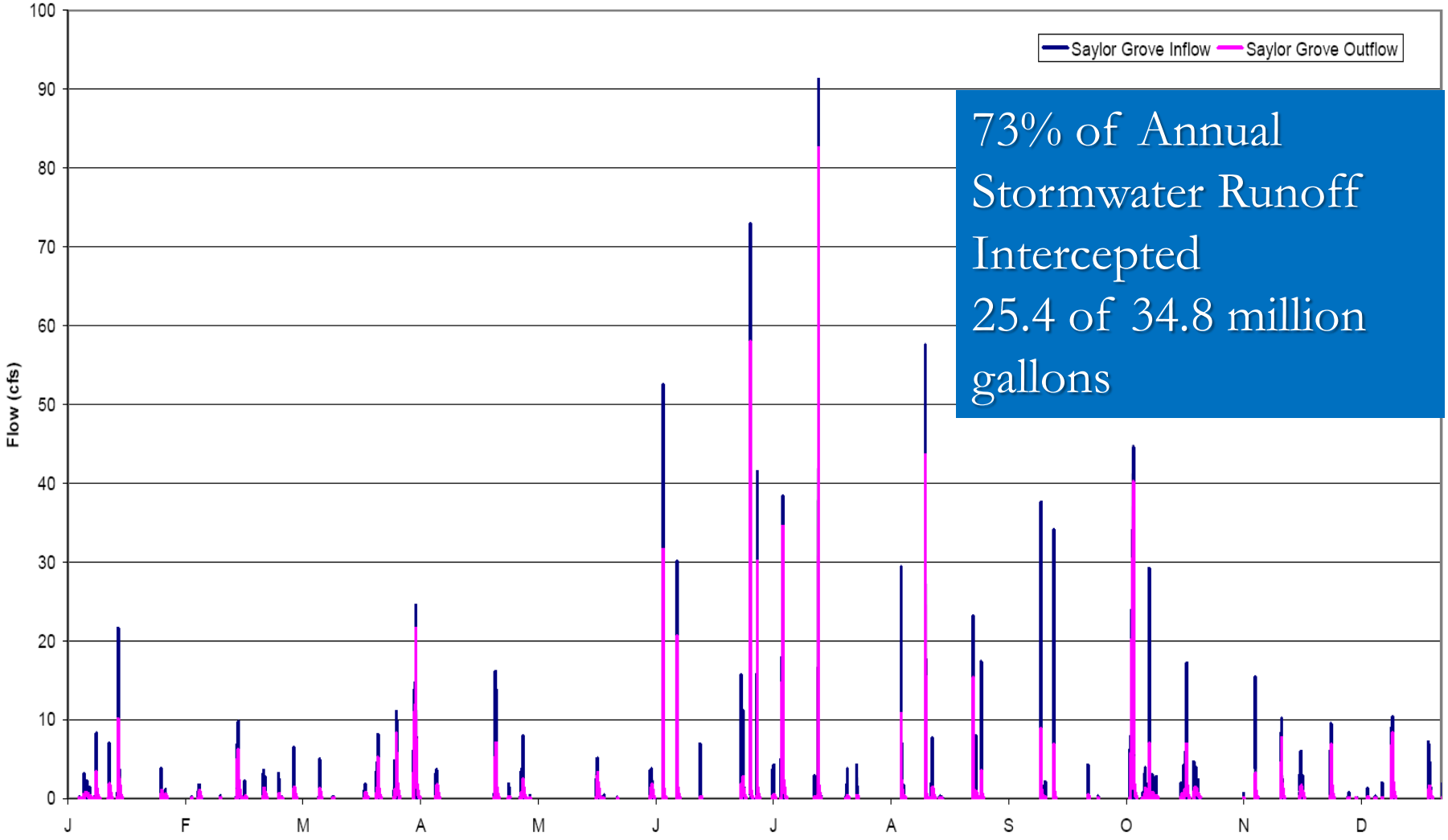
Saylors Grove 2008

Hydraulic Model Calibration



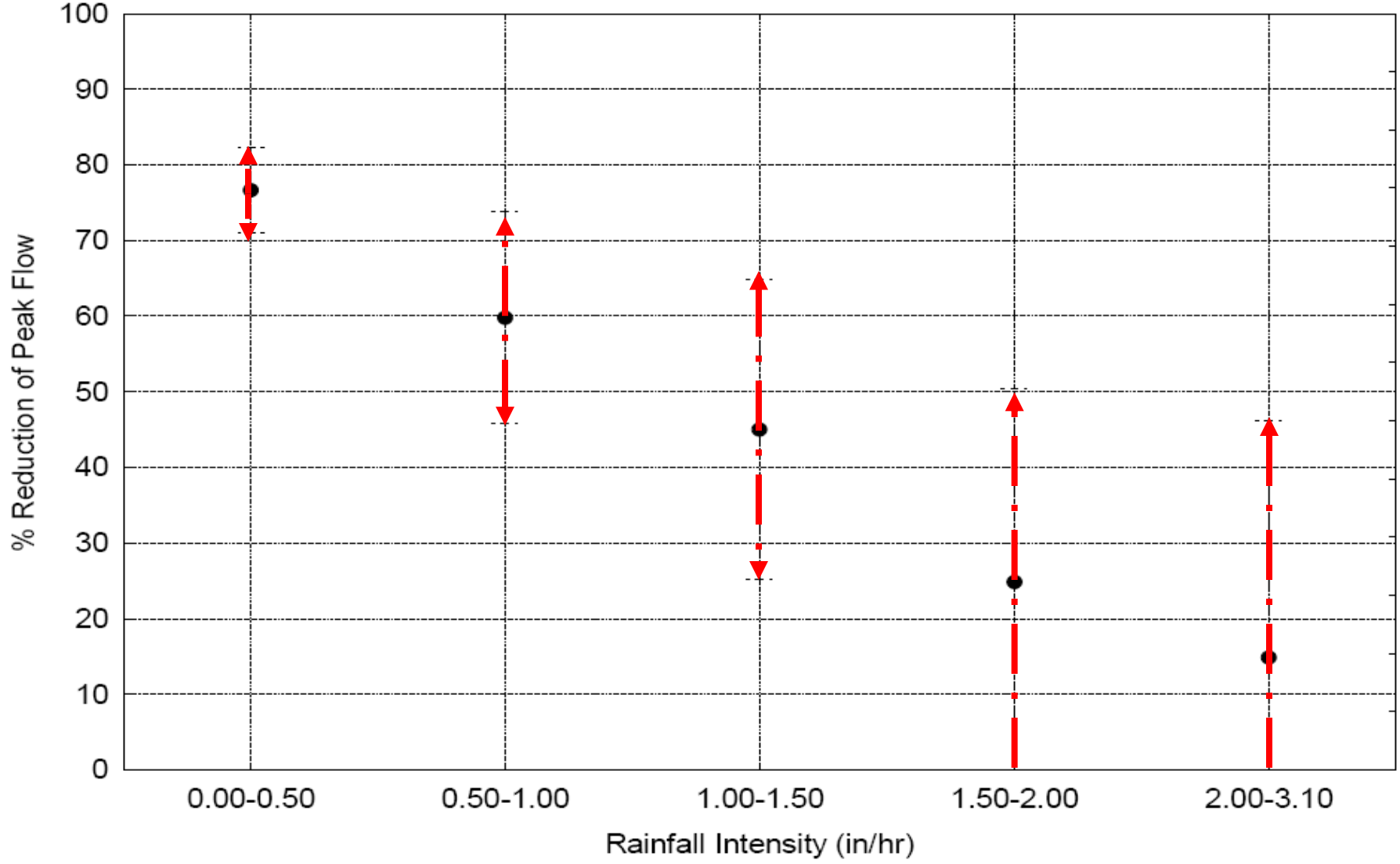
HydroCAD Model
HOBO Pressure
Sensor Monitoring

Flow In and Out During Model Rainfall Year

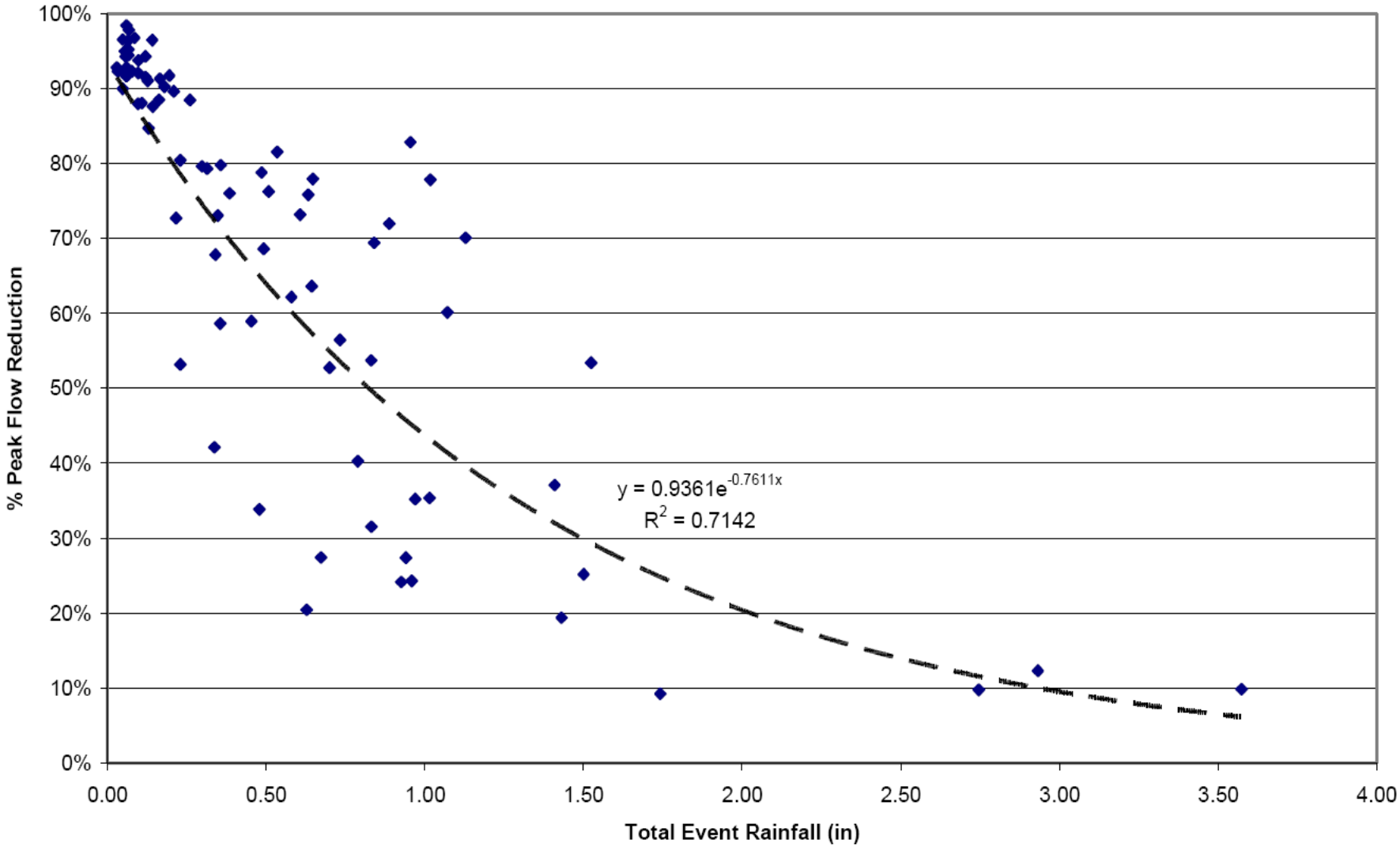


73% of Annual Stormwater Runoff Intercepted
25.4 of 34.8 million gallons

Rainfall Intensity Peak Flow Reduction

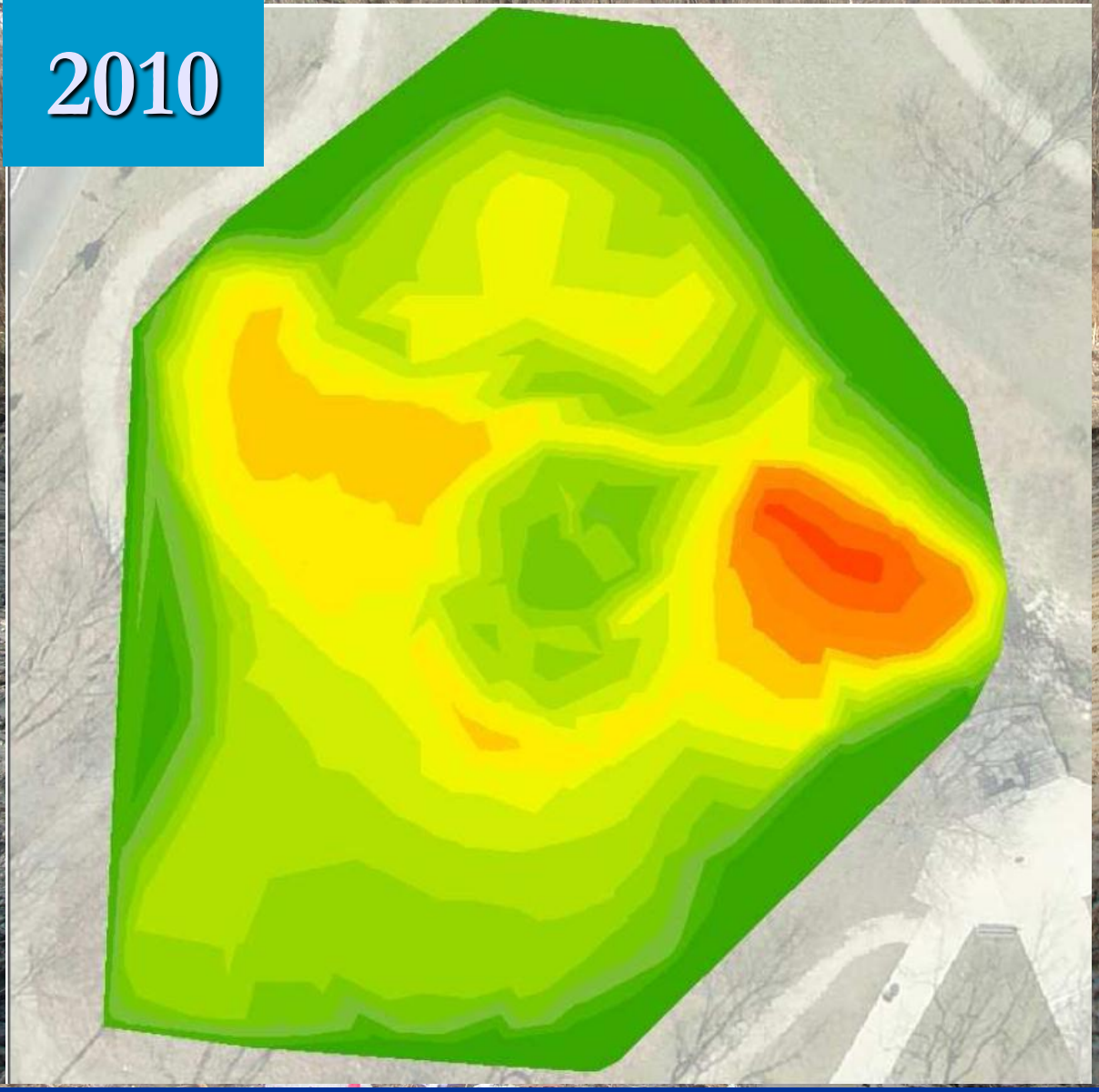


Total Rain Event Peak Flow Reduction



Topographic Monitoring

2010



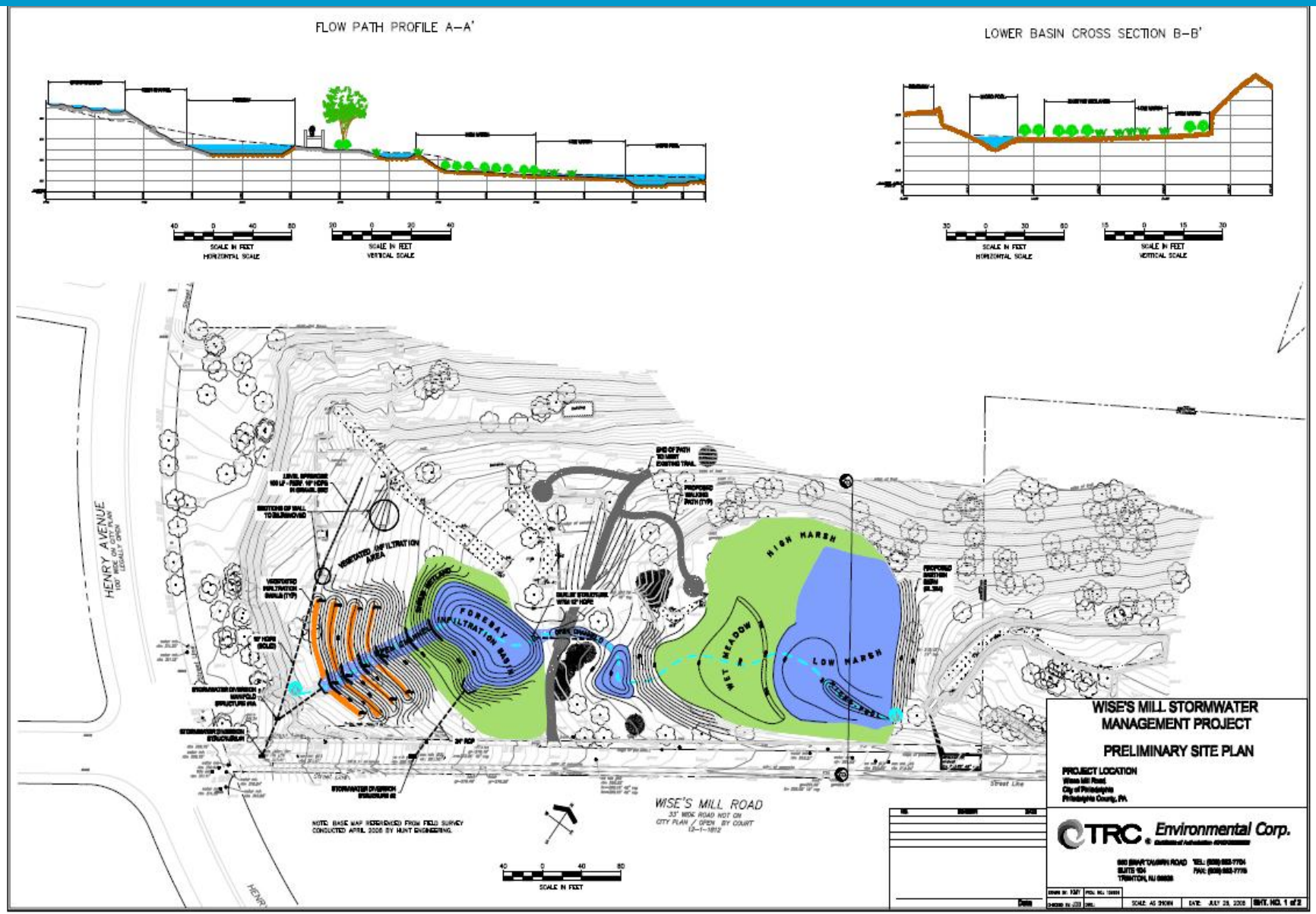
Photomonitoring

Invasives Management

Wises Mill Run Existing Conditions

Wises Mill Run Pre-Construction

Wises Mill Run Bioretention Facility

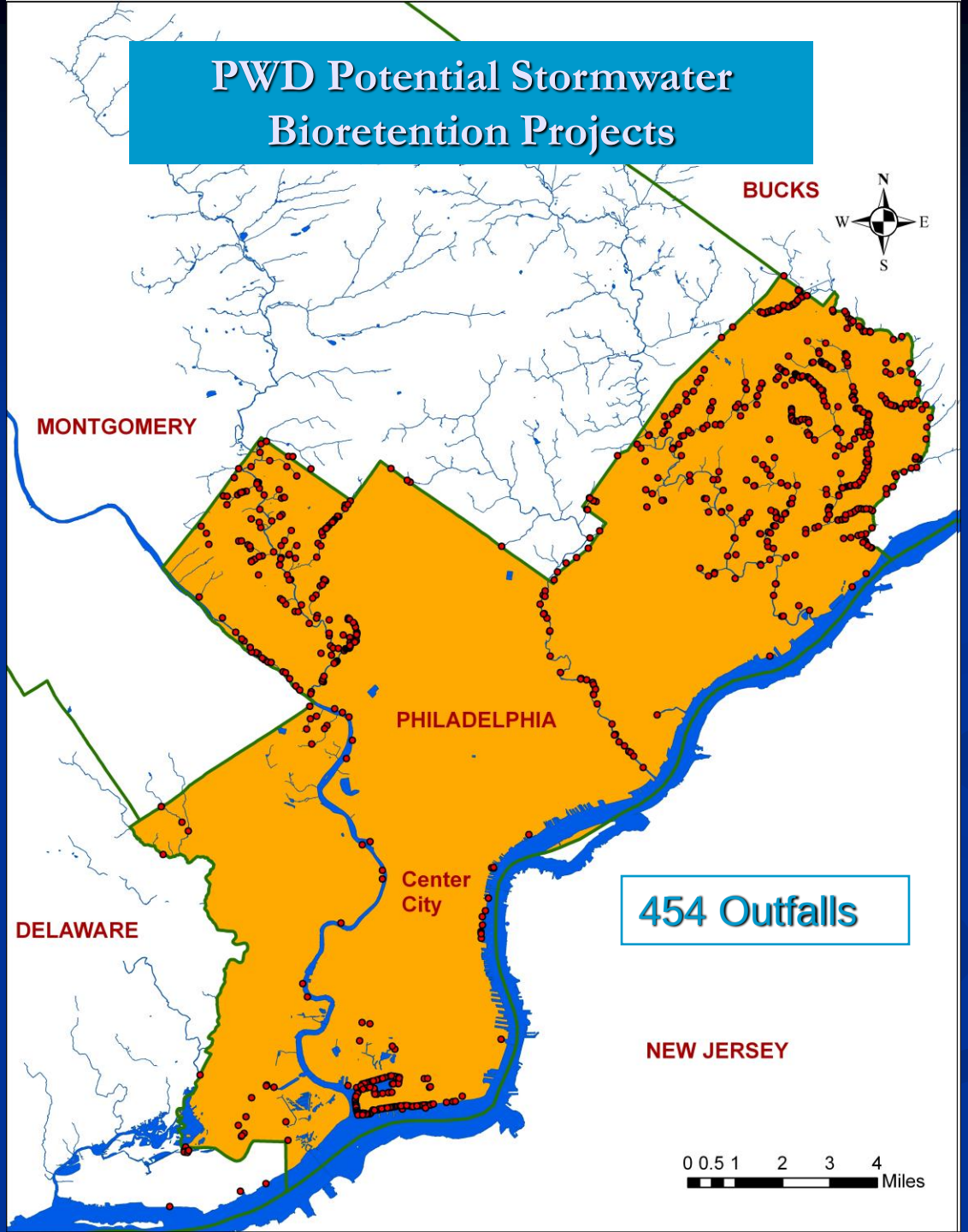


Cathedral Run Existing Conditions

Cathedral Run Pre-Construction

Cathedral Run Bioretention Facility

PWD Potential Stormwater Bioretention Projects



Questions?

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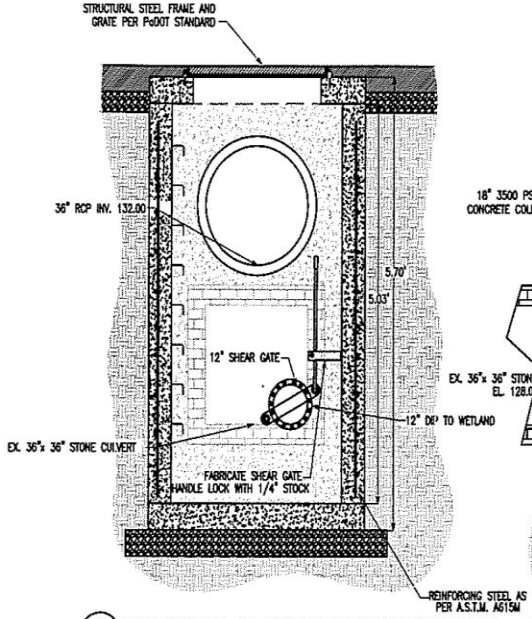
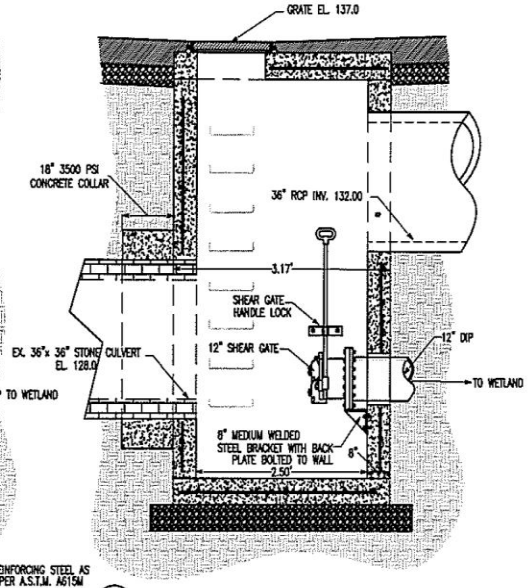
Cathedral Run Proposed

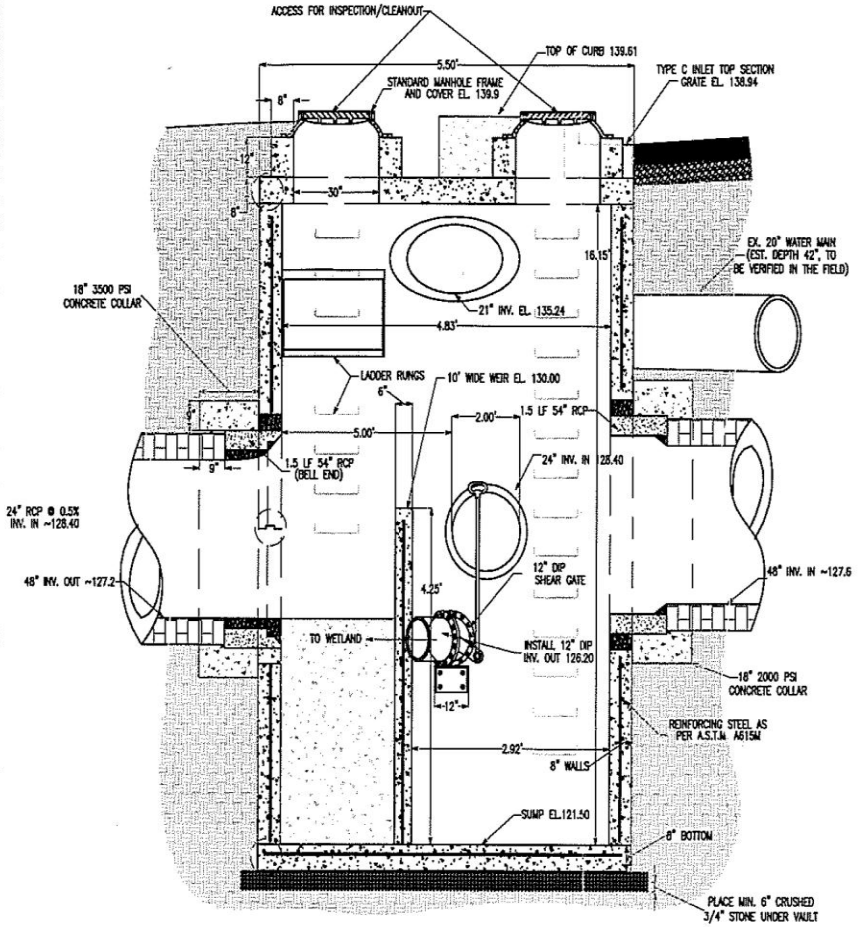
Wises Mill Run Proposed



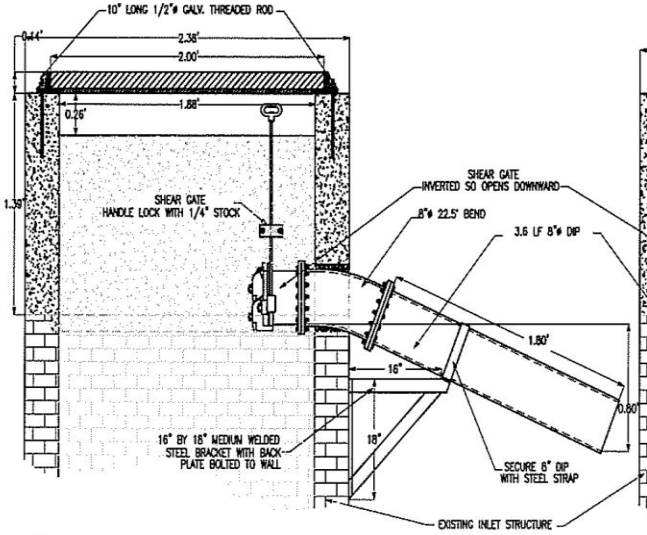
1/1 RITTENHOUSE AVE. INLET DIVERSION ELEVATION
1" = 4'



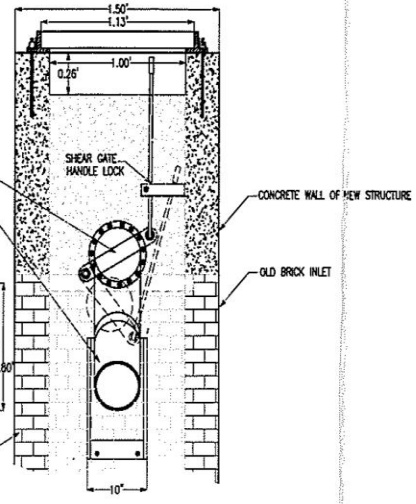
2/1 RITTENHOUSE AVE. INLET DIVERSION SECTION
1" = 4'



5/1 WISSAHICKON AVE. DIVERSION STRUCTURE-SECTION THROUGH WEIR
1" = 4'



3/1 SECTION THROUGH OUTLET STRUCTURE
1" = 2'



4/1 ELEVATION OF OUTLET STRUCTURE
1" = 2'

FACILITIES

SAYLOR
STORMWATE

RITTENHOUSE ST. A